-- A picture display apparatus for displaying a picture in response to inputted picture signals of an arbitrary format. The apparatus includes a picture display unit having an arranged matrix of dots for picture display, a picture display unit drive for converting inputted picture signals into display picture signals adapted for display on the picture display unit and generating drive timing signals for driving the picture display unit, the picture display unit driver including a picture memory for storing picture signals inputted into the picture memory, a display position detector for detecting a picture display position on the picture display unit based on the display picture signals and the drive timing signals, and a display position controller for controlling a timing of admission of the inputted picture signals to the picture memory of the picture display unit driver, based on the detected display position data from the display position detector. The picture display unit, the picture display unit driver, the display position detector and the display position controller are integrated to form the picture display apparatus for receiving the inputted picture signals of an arbitrary format. --

a1

IN THE SPECIFICATION:

Please amend the specification as follows:

Please substitute the paragraph beginning at page 1, line 11, and ending on page 2, line 1, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- In recent years, as picture display apparatus for computer apparatus, for example, those of the so-called multiscan-type capable of displaying picture signals having various frequencies (or resolutions) have become popular. In this regard, picture signals inputted from the exterior are not always of a prescribed single format, but even picture signals having an identical resolution can have different horizontal or vertical initial or starting points of display on an entire display picture area or a display panel. This means that the deviation in starting point of a display can lead to a lack of picture display in the case of a dot matrix-type picture display apparatus wherein a picture display region corresponds to a number of display pixels. Accordingly, the picture display apparatus is required to have a means for displaying a picture at an exact position corresponding to an inputted picture signal. --

Please substitute the paragraph beginning at page 3, line 25, and ending on page 4, line 18, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- The picture display apparatus of Figure 5 obviates the need for a manual adjustment for signal formats for which preset values have been set, but for signals of other formats, the operator is required to effect a troublesome manual adjustment of horizontal and vertical positions while observing a picture displayed on the display unit and the adjustment is also difficult. On the other hand, the picture display apparatus of Figure 6 allows an automatic positional alignment, but in view of higher resolution and higher input signal frequency adopted in recent years, the operation speed of the picture position detection circuit 6′ is increased

correspondingly to result in an increased current flow and a higher-speed expensive circuit device for realizing the picture position detection circuit 6′, thus incurring an increased production and running cost. Particularly, in the case of effecting the picture position adjustment dot by dot, a substantial time is required for display position adjustment to cause a delay in commencement of display. --

a3 cont.

Please substitute the paragraph beginning at page 6, line 5, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a4

-- Figure 2 is a time chart for illustrating an example of a display position relative to a horizontal synchronizing signal. --

Please substitute the paragraph beginning at page 6, line 8, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a5

-- Figure 3 is a time chart for illustrating an example of a display position relative to a vertical synchronizing signal. --

Please substitute the paragraph beginning at page 8, line 2, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a6

-- Further, by adopting a system sequence or flow of effecting an automatic picture position adjustment immediately before displaying a first picture in the picture display apparatus,

a6 cont. it becomes possible to provide a system whereby an operator is not aware of positional deviation of a display picture. --

Please substitute the paragraph beginning at page 12, line 1, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- On the other hand, in a case in which there is a large difference between the actual memory writing time and the set memory writing time, e.g., a difference of more than 304 dots exceeding a blanking period for inputted picture signals in an assumed case including a total of 1328 dots within an interval between subsequent horizontal synchronizing signals and 1024 display dots, the video signal output from the picture display unit drive circuit 2 assumes a form as shown at VIDEO′ in Figure 7. In Figure 7, Phr denotes a horizontal picture data output termination, whereas the writing time into the picture memory is deviated by more than a blanking period, and the picture data outputted from the picture display unit drive circuit 2 beginning from time Phf and ending with time Phr is caused to include a blanking period therein. As a result, while the display position is actually remarkably deviated, the display position data HFC and HRC detected by the display position detection circuit 6 happen to be identical to set timing data of Phf and Phr, thus obstructing an accurate adjustment. --

a7

Please substitute the paragraph beginning at page 12, line 22, and ending on page 13, line 10, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- For obviating the above difficulty, a minimum degree within a necessary extent of preset data (e.g., ideal pixel memory writing timing data for each of representative resolution formats such as VGA, SVGA and XGA) are stored in the preset data memory 5, and one of such preset format data is stored in advance in the picture display unit drive circuit 2 after judging the inputted signal format in the display control circuit 4, thereby obviating the occurrence of an extreme positional deviation as shown at VIDEO′ in Figure 7. After obviating such an extreme deviation, a minor degree of deviation as shown at VIDEO in Figure 7 is removed by controlling the timing for writing digital data in the pixel memory in the circuit 2 according to the adjustment flow of Figure 4. --

a8

Please substitute the paragraph beginning at page 13, line 26, and ending on page 14, line 21, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Referring to Figure 4, as a first step S1 of display position adjustment, horizontal and vertical display position data HFC, HRC, VFC and VRC are detected by the display position detection circuit 6. Then, at step S2, the set horizontal output commencement time Phf and vertical output commencement time Pvf from the picture display unit drive circuit 2 are compared with actual horizontal output commencement time HFC and vertical output commencement time VFC, respectively, detected by the display position detection circuit 6. As a result of this comparison, if the compared results are unequal, this means that the timing of writing digital data in the picture memory 2m is faster (i.e., too early; on the other hand, in a case

a9

in which the time is slower, no positional deviation in display commencement position is recognized as the data is present at the time after reading out of the memory and a prescribed processing of read data), and an operation at step S3 of adjusting a horizontal writing time Mh and a vertical writing time Mv respectively according to the following formulae:

a9 cont.

$$Mh = Mhs + [HFC\text{-}Phf] \quad \ldots (1)$$

$$Mv = Mvs + [VFC\text{-}Pvf] \quad \ldots (2)$$

wherein Mhs and Mvs denote initial values of horizontal writing and vertical writing, respectively, in the picture memory 2m. If the comparison results at step S2 are equal, an operation at step S4 is performed. --

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Please substitute the paragraph beginning at page 14, line 22, and ending on page 15, line 16, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- At Step 4, the set horizontal output termination time Phr and vertical output termination time Pvr from the picture display unit drive circuit 2 are compared with actual horizontal output termination time HRC and vertical output termination time VRC, respectively, detected by the display position detection circuit 6. As a result of this comparison, if the compared results are unequal, this means that the timing of writing digital data in the picture memory 2m is slower (i.e., too late; on the other hand, in a case in which the time is faster, no positional deviation in display termination position is recognized as the data is present at the time after reading out of the memory and prescribed processing of read data), and an operator at step

a10